UNITED STATES MARINE CORPS
MARINE AIRCRAFT GROUP 12
FIRST MARINE AIRCRAFT WING, FMFPAC
UNIT 37150
FPO AP 96603-7150

IN REPLY REFER TO
GruO 3430.1A
3:JME
28 Mar 1988

GROUP ORDER 3430.1A

From: Commanding Officer
To: Distribution List

Subj: Standing Operating Procedures for Electronic Warfare

Ref: (a) FMFPacO P03430.1D (NOTAL)
(b) WgO P03430.4A (NOTAL)

Encl: (1) Definitions of Electronic Warfare Terms

1. Purpose. To establish an aggressive and comprehensive electronic warfare program within Marine Aircraft Group 12 under the policies and procedures set forth in the references.

2. Cancellation. GruO P03430.1.

3. Information. Modern warfare is characterized by high tech weapons and communication systems. Air and ground radars, missile tracking/guidance systems, radios, satellite/data links, and navigation aids are tools of modern warfare which operate in a medium known as the electromagnetic spectrum. Electronic warfare encompasses the friendly use of the electromagnetic spectrum while effectively denying its use to our adversaries.

4. Policy. MAG-12's capability for electronic warfare is a combat asset and shall be subject to the electronic (ELSEC) and communication (COMSEC) security measures outlined in the references, and includes the security measures stated below:

a. Radiation of electronic equipment shall be kept to the minimum required to accomplish the mission. Intercept of such radiation by communist bloc countries is more apt to occur while operating in WestPac than in CONUS.

b. During peacetime, active ECCM techniques will not be used when communist bloc jamming or ECM is encountered.

c. All incidents of meaconing, interference, jamming, and instrusion (MIJI) shall be reported within 12 hours in accordance with the Flight Information Publication (FLIP) General Planning, chapter 5, and WgO P03430.4A, chapter 4.

d. For VMAQ-2 detachments, ECM restrictions regarding peacetime modulations and frequencies shall be the same as

currently promulgated by the parent squadron and MCO P03430.4A, whichever is more restrictive.

5. Electronic Warfare Program. The EW program consists of the instructions contained in the references, this Group Order, and the training programs established by the Group and Squadron Electronic Warfare Officers. The conduct of the EW program is the responsibility of MAG-12 Operations and is managed by the Group EWO.

6. Responsibilities. The responsibilities outlined in this paragraph are the minimum to be accomplished.

a. MAG-12 EWO shall:

(1) Keep the Group CO and staff abreast of the latest developments in EW as it applies to combat readiness.

(2) Keep the Group CO and staff appraised of the capabilities and readiness of the Group EW assets.

(3) Coordinate with the 1st MAW EWO to ensure maximum EW training is derived from EW assets involved in WESTPAC exercises.

(4) Ensure adequate training aids and information is available to squadron EW Officers for training of squadron personnel.

(5) Monitor squadron EW training programs.

(6) Ensure continuous support of the MIJI program in accordance with existing publications.

(7) Submit the following reports in accordance with reference (b):

(a) EW Lessons Learned Report

(b) Operational Status of U.S. Noncommunication Electronic Equipment Report

(c) PACOM ELINT REPORT-1

(d) Jamming Effectiveness Report

(8) Maintain current EW plans, operations orders and policies pertaining to this command.

(9) Ensure approval is granted and proper coordination accomplished with appropriate authorities prior to ECM operations.

b. MAG-12 S-2 shall:

(1) Coordinate with VMAQ-2 Det Tactical Electronic Reconnaissance Processing and Evaluation System (TERPES) in maintaining a current Electronic Order of Battle (EOB) to support contingency plans and assist in the preparation of threat briefs.

c. Squadron Commanders shall:

(1) Assign in writing an EWO and forward a copy of this designation to the Group EWO.

(2) Incorporate EW training in the professional training of personnel under their command who operate aircraft, tactical vehicles, electronic radiating (RF radiation) equipment, and those persons responsible for tactical mission planning.

d. VMAQ-2 Det shall:

(1) Provide an Electronic Counter Measures Officer for assignment as the MAG-12 EWO.

(2) Provide a representative to the Signal Intelligence and Electronic Warfare Coordination Center (S/EWCC) upon its activation, per reference (a).

(3) Maintain a current EOB to support contingency plans within the capabilities of TERPES and the Tactical EA-6B Mission Support (TEAMS) system.

(4) Maintain a classified and non-classified EW capabilities brief of the EA-6B and US/Soviet EW doctrines.

7. Training. Units within this command will conduct a minimum of 3 hours of EW training per quarter as it pertains to their respective missions. Additionally, radio operators will receive a minimum of 2 hours ECCM training per quarter. Squadron/detachment EW Officers will ensure that EW training is properly recorded.

a. Commanders, staff officers, and mission planners should receive, regular EW training in the following areas:

(1) EW planning considerations, proper employment of EW assets, and the use of electronic cover and deception.

(2) EW doctrine, organization, equipment and tactics associated with adversary armed forces.

(3) Capabilities and limitations of electronic equipment and systems in an ECM environment.

(4) Emission control (EMCON) procedures.

(5) ECM capabilities of potential adversaries.

b. Aircrews should receive, as a minimum, regular EW training in the following areas:

(1) MIJI reporting requirements.

(2) EMCON, COMSEC, and SIGSEC procedures.

(3) RHAW indications and interpretation.

(4) Operation of aircraft systems in an ECM environment.

(5) ECCM techniques and capabilities of their aircraft systems.

c. EW training services available. Requests for the following services/facilities should be routed through the Group S-3.

(1) EW doctrine and capabilities brief of the EA-6B is maintained by the VMAQ-2 Det and is available to any unit.

(2) TERPES and TEAMS can provide mission planning services; EOB, tactical profile analysis, computer generated route charts and radar shadow zones.

(3) A Radar Warning (RHAW) Trainer is maintained by the Group EWO in the S-2 Tactical Operations Center. Aircrew are encouraged to utilize this trainer for general proficiency and mission planning.

(4) Pilsung EW range, (RK)R-110, provides an EW environment located within a tactical bombing complex. Range procedures and pertinent information can be found in the ACCR 55-5. Requests for this range shall be routed through the Group S-3.

(5) Crow Valley, (RP)R-58, provides an EW environment located with bombing targets. Range procedures and pertinent information can be found in COMUSFAC-SUBICINST 3500.1. Requests for this range shall be routed through the Group S-3.

8. Action. Unit commanders and staff officers will provide full support to the EW program. Recommendations or comments regarding the program or training available shall be forwarded to the Group S-3 via the chain of command.

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DISTRIBUTION: B

STANDING OPERATING PROCEDURES FOR ELECTRONIC WARFARE

DEFINITIONS OF ELECTRONIC WARFARE TERMS

1. Burn Through. The distance at which the signal to noise ratio is greater than one. A radar is expected to be able to detect an aircraft at this distance despite the presence of electronic jamming support.

2. Communications Security (COMSEC). The protection resulting from all measures designed to deny unauthorized persons information of value which might be derived from the possession and study of telecommunications, or to mislead unauthorized person in their interpretation of the results of such a study.

3. Ducting. An atmospheric phenomena which results in unusually long propagation distances of electromagnetic energy along a thermal layer. Ducting allows an increase in radar detection range within the thermal duct. Passive intercept of radar signals is also possible at longer than usual distances when both transmitter and receiver are within the duct.

4. Electro-Optics (EO). The interaction between optics and electronics leading to transformation of electrical energy into light, or vice versa, with the use of an optical device. An example of an EO device is a TV tracking system.

5. Electronic Order of Battle (EOB). A listing of noncommunications electronic devices to include site designation, nomenclature, location, site function and other pertinent information.

6. Electronic Warfare (EW). The military action involving the use of electromagnetic energy to determine, exploit, reduce or prevent hostile use of the electromagnetic spectrum, while retaining its use by friendly forces.

7. Electronic Counter Measures (ECM). The division of EW involving actions taken to reduce or prevent hostile use of the electromagnetic spectrum. This is commonly known as "jamming."

8. Electronic Counter Counter Measures (ECCM). The division of EW involving actions taken to ensure friendly use of the electromagnetic spectrum in the presence of hostile ECM or to combat the enemy's attempts to collect information from friendly friendly electromagnetic radiation.

ENCLOSURE (1)

9. Electronic Support Measures (ESM). The division of EW involving actions taken to intercept, identify, locate and derive information from electromagnetic radiation.

10. Emission Control (EMCON). The management of electromagnetic radiations to counter an enemy's capability to detect, identify, locate, or derive information from friendly emitters.

11. Signal Security (SIGSEC). A generic term which includes both communications security and electronic security.

12. Electronic Security (ELSEC). The protection resulting from all measures designed to deny unauthorized persons information of value which might be derived from their intercept and study of noncommunications electromagnetic radiations, such as radars.

13. Meaconing, Intrusion, Jamming, Interference (MIJI)

a. Meaconing. A system of transmitting actual or simulated radio navigation signals for the purpose of confusing navigation. For example, meaconing stations can cause inaccurate bearings to be obtained by aircraft, ships, or ground stations.

b. Intrusion. The intentional insertion of electromagnetic energy into transmission paths in any manner with the objective of deceiving operators or causing confusion.

c. Jamming. The deliberate radiation, reradiation, or reflection of electromagnetic energy with the object of impairing the use of electronic devices, equipment, or systems being used by an enemy.

d. Interference. Any harmful radiation, the source of which cannot be positively identified as locally generated spurious signals or technical difficulties, or other readily identifiable and easily correctable sources.

14. Radar Horizon. The distance at which a radar can see a target via line-of-sight, taking into account the curvature of the earth and altitudes of the radar and the target, and altitudes of the radar and the target.

15. Shadow Zone. That area in which line-of-sight between a radar and a target is blocked by terrain (i.e. terrain masking).

16. Signal-to-Noise Ratio. Measured at the receiver antenna of a radar, it is the ratio of the strength of a radar's reflected energy to that of the jamming present. When this ratio is greater than one, burn through occurs.

17. Track on Jam. The ability of a radar to track a jamming platform using a line of bearing to the jamming source.